Let

$$(N' + P) + \lambda\tau = n' + \delta n' + p + (\lambda + \delta\lambda)\tau$$

be made an identity by a proper determination of x and y; then since

$$N' + P = (n' + p)(1 + x + y\tau),$$

we have

$$x = \frac{\delta n'}{n' + p} \quad \text{and} \quad y = \frac{\delta\lambda}{n' + p};$$

$$\therefore\ S = C + (n' + \delta n' + p)\tau + 365{\cdot}25 \times 2\pi\tau\left(1 + \frac{\delta n' . \tau + \delta\lambda . \tau^2}{n' + p}\right) + (\lambda + \delta\lambda)\tau^2.$$

Comparing this with the tabular expression

$$S' = C + (n' + \delta n' + p)t + 365{\cdot}25 \times 2\pi . t + (\lambda + \delta\lambda)t^2,$$

we see at once that S′ can be made identical with S only by the following assumptions:—

(1) The tabular t is really τ.

(2) That we apply a correction

$$= 365{\cdot}25 \times 2\pi\left(\frac{\delta n' . \tau + \delta\lambda . \tau^2}{n' + p}\right).$$

The conclusions to be drawn are the same as before. The tabular sidereal times at mean noon require the correction

$$365{\cdot}25 \times 2\pi\left(\frac{\delta n' . \tau + \delta\lambda . \tau^2}{n' + p}\right)$$

where τ may be taken as sensibly equal to t. This demonstration proves the necessity for a correction which if neglected would produce an apparent secular acceleration of $4''$ in the Moon's mean motion.

The *rationale* of this method is simply that with every change in the unit of time we must, if we determine our count of days directly from the increase of Observed R.A. by 360°, introduce a correction to render this assumption true. If this is not done, we must of necessity make our theoretical Right Ascensions run away from our observed ones. There is no escape from such a false assumption.

Note on Mr. Stone's Paper in the last number of the "Monthly Notices."

The statement on page 343, line 8, and three following lines, is badly expressed. It should read: "From which it follows that the absolute time in an interval of t years expressed in terms of the unit t_1 exceeds the absolute time in an interval of t years expressed in terms of t_2 by

$$\frac{\delta n'}{n'} . t."$$

Preliminary Account of a Telegraphic Determination of the Longitude of the Royal Observatory, Cape of Good Hope. By David Gill, LL.D., F.R.S., H.M. Astronomer at the Cape of Good Hope.

The longitude of the Royal Observatory, Cape of Good Hope, is the origin of longitudes for the British and American Transit of *Venus* Stations in South Africa and Madagascar. I have therefore thought it desirable to publish, as soon as possible, a brief account of the recent operations connecting the longitudes of Aden and the Cape, and to quote the approximate results obtained, in anticipation of the definitive results and more detailed account that will afterwards appear in the publications of the Observatory.

On Oct. 6, 1879, I addressed Sir George Airy, then Astronomer Royal, drawing his attention to the fact that about the end of the year the Cape would probably be in telegraphic communication with England, and asking whether advantage should not be taken of this circumstance to determine the longitude of the Cape of Good Hope as soon as possible. On Nov. 13 of the same year Sir George replied, "To mention the galvanic determination of the Cape of Good Hope Observatory is quite enough; the thing must be done as soon as may be."

After much correspondence and inquiry as to possibilities, I officially addressed the Secretary of the Admiralty on 1880, June 23, enclosing a general plan of the proposed operations, together with the necessary estimates of cost.

On 1880, Sept. 20, I took advantage of the kind invitation of Commodore (now Admiral) Sir F. Richards, K.C.B., to accompany him, as his guest, on board H.M.S. "Boadicea" to Port Elizabeth and Durban, partly to select sites of observation, but especially to ascertain whether signals could be exchanged directly between Aden and Durban without the intervention of an observer at Zanzibar. At Durban I made the necessary experiments, and found that signals sent from Aden, though quite useless for longitude purposes when received on the ordinary speaking galvanometers, were quite sharp and well marked when received on Thomson's air dead-beat* galvanometer. This fact I reported to the Admiralty by telegraph from Durban, and, on my return to the Cape, received official authority to proceed with the work. The necessary huts were soon made in Cape Town, but some unforeseen delays occurred in the despatch of the transit instruments and clocks from England, and it was not until 1881, March 2, that they reached the Cape.

* In the ordinary submarine galvanometer the mirror is suspended in water; in the air dead-beat the mirror is suspended in air. The mirror in the latter is nearly of the diameter of the cylinder in which it is hung, and the length of this cylinder is limited by glass plates. The mirror moves very freely at the first impulse, but the extension of the swing is checked by the passage of air round the edge of the mirror.